HPLC Analysis of Six Miscellaneous Antibacterial Drugs

Application

Drug Development

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Nalidixic acid, combined with synthetic compounds trimethoprim and sulfamethoxazole, are very effective in treating infections of the urinary tract. Chloramphenicol is a natural compound found in streptomyces, but it can also be easily synthesized. Chloramphenicol is used in treating a wide range of bacterial diseases, for example, typhoid or parrot fever. Furazolidone is used mainly against trichomonades and intestinal bacteria. The analysis of six different antibacterial drugs was obtained with a Zorbax SB-C18 column (Figure 1). Fluorescence spectrophotometry can also be used to detect some of these antibacterial drugs. For example trimethoprim and sulfamethoxazole were analyzed and detected by a fluorescence detector. The fluorescence spectra is shown in Figure 2.

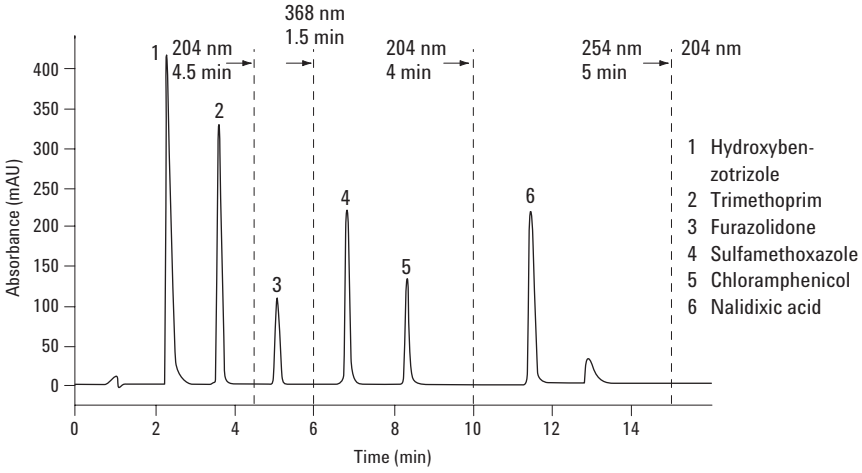

Figure 1. Analysis of six antibacterial drugs using a variable wavelength detector.

Highlights

- The SB-C18 column provides excellent peak shape and selectivity for basic antibacterial drugs.
- The SB-C18 column shows excellent stability at low pH.
- The SB-C18 column shows excellent and rapid resolution of antibacterial drugs at low pH and buffer concentration.
- The HPLC method shows an easy but reliable and precise analysis of the antibacterial drugs.
- The values for limit of detection (LOD), precision of retention time (RT), and area show the good performance of the HPLC analysis.

Experimental Conditions

Equipment: Agilent 1100 Series HPLC; **UV Detector:** Variable wavelength detector at 0 min, 204 nm, at 4.5 min, 368 nm, at 6 min, 204 nm, at 10 min, 254 nm, at 15 min, 204 nm, standard cell; **Column:** Zorbax SB-C18, 3. 5 µm, 4.6 × 75 mm (part number 866953-902), Guard cartridges: SB-C18, 5 µm, 4.6 × 12.5 mm (part number 820950-920); **Mobile phase:** A = 0.025 M KH_2PO_4 in water (pH = 3), B = acetonitrile; **Injection volume:** 5 µL; **Temp:** 40 °C; **Flow rate:** 1.0 mL/min; **Gradient:** at 0 min 10% B, at 10 min 30% B, at 15 min 60% B; **Column wash:** at 16 min 10% B; **Stop time:** 16 min; **Post time:** 5 min

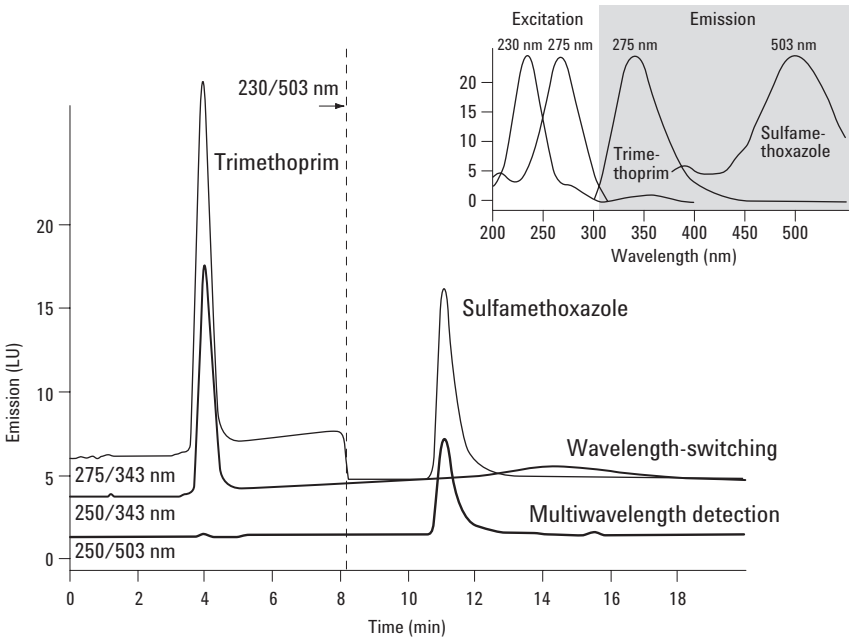

Figure 2. Analysis of trimethoprim and sulfamethoxazole using a fluorescence detector (column: Zorbax SB-C18, 5 µm, 50 × 2.1 mm)

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